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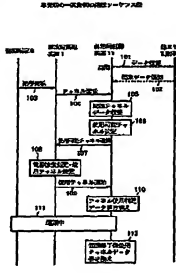
(71)出願人 000004237
日本電気株式会社
東京都港区芝五丁目7番1号

(72)発明者 佐木 通幸
東京都港区芝5丁目7番1号 日本電気株式会社内

(74)代理人 弁理士 松浦 憲行

(54)【発明の名称】 移動通信システムにおけるチャネル設定方法

(57)【要約】
【目的】 本発明は、混信に干渉のないチャネル設定ができる移動通信システムにおけるチャネル設定方法を提供することを目的とする。
【構成】 任意の無線ゾーンに在圏する無線端末8からの発呼要求(ステップ103)を受けて、その無線ゾーンの中心に位置する基地局無線装置1が上位の基地局制御装置11に対してチャネル要求を行う(ステップ104)と、基地局制御装置11は基地局無線装置1及びその基地局無線装置1に隣接する基地局無線装置の各使用チャネル定義データの論理積をとることで使用に支障のない複数の使用可能チャネルを決定してチャネル要求をした基地局無線装置1に通知する(ステップ106～107)。基地局無線装置1は、通知されたこれら複数の使用可能チャネルの中から最初に所定値以上の雑音強度の測定結果が得られた使用可能チャネルを使用チャネルに決定する(ステップ108)。



[JP 08-116567,A]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] this invention relates to the channel setting method in the mobile communications system which a base station control unit assigns an usable channel, and notifies to a mobile station through base station radio equipment to the call request which started the channel setting method in a mobile communications system, especially was inputted through base station radio equipment from the mobile station.
[0002]
[Description of the Prior Art] While dividing one service area into two or more zones, base station radio equipment is arranged at the center of each zone, respectively, and in the mobile communications system of composition of that two or more base station radio equipment is controlled by the base station control unit, frequency is conventionally assigned fixed for every zone (for example, JP,63-39220,A).
[0003] That is, a channel setup without interference is realized by the frequency used in one zone assigning two or more frequency arranged with a fixed frequency interval, and communicating by the frequency used in the zone of another side assigning the frequency arranged in the gap about the 1st and 2nd zones with which it does not lap mutually among two or more zones in this conventional mobile communications system.
[0004] Moreover, as other channel setting methods in the conventional mobile communications system, a dynamic channel setup to which base station radio equipment measures the field strength of all usable channels, chooses a channel with least interference as from the measurement result, and starts use of the channel is also known.
[0005]
[Problem(s) to be Solved by the Invention] However, the conventional channel setting method which assigns the aforementioned frequency fixed is not a best policy for the mobile communications system which cannot aim at a deployment of frequency but the number of mobile stations will increase by increasingly from now on.
[0006] On the other hand, the latter conventional dynamic channel setting method Since base station radio equipment is checking all usable channels in case base station radio equipment sets up each mobile station (henceforth a "radio terminal"), and a radio link When the channel which base station radio equipment and adjoining base station radio equipment to carry out channel hunt are using is known, measurement of the field strength of all channels also including the channel in use is performed, and there is a problem that processing is overdue.
[0007] this invention aims at offering the channel setting method in the mobile communications system which can perform a channel setup which

was mad in view of the abov -mentioned point, and does not hav interfer nce quickly.
[0008] Moreover, other purposes of this invention are to offer the channel setting method in the mobile communications system which can set up a us channel dynamically similarly with other adjoining base station radio control equipments.
[0009]
[Means for Solving the Problem] In order that this invention may attain the above-mentioned purpose, each service area is divided into two or more radio zones, respectively. And two or more base station radio equipment by all that are located at each center of two or more radio zones where a base station control unit constitutes one service area for every service area is set to the mobile communications system managed, respectively. Each ID data of the base station radio equipment with which two or more base station radio equipment with which a local station manages a base station control unit is adjoined in other service areas, When it has use channel **** data of these base station radio equipment and the channel demand from arbitrary base station radio equipment is made to a base station control unit A base station control unit is notified to the base station radio equipment which determined two or more usable channels which do not have trouble in use by taking the AND of each use channel **** data of the base station radio equipment contiguous to the base station radio equipment which carried out the channel demand, and its base station radio equipment, and carried out the channel demand. The base station radio equipment which carried out the channel demand determines the usable channel of the field strength beyond the predetermined value chosen from two or more usable channels as a use chann l based on the notice, and notifies it to a base station control unit.
[0010] Moreover, in this invention, the base station control unit is connected through an adjoining base station control unit and an adjoining data circuit, and the use channel **** data of the base station radio equipment with which it adjoins in others and a service area among two or more base station radio equipment which a local station manages are periodically collected through a data circuit.
[0011]
[Function] If the base station radio equipment located in arbitrary radio zones in this invention at the center of the radio zone in response to the call request from the mobile station which carries out a ** area performs a channel demand to the base station control unit of a high order The base station control unit is notified to the base station radio equipment which determined two or more usable channels which do not have trouble in use by taking the AND of each use channel **** data of the base station radio equipment contiguous to the base station radio equipment which carried out the channel demand; and its base station radio equipment, and carried out the channel demand.
[0012] Therefore, in this invention, the base station radio equipment which carried out the channel demand can determine the usable channel by which the field strength of all channels was measured, and a use channel was not determined, but the measurement result of the field strength beyond a predetermined value was obtained by the beginning out of the notified usable channel of these plurality as a use channel.
[0013] Moreover, in this invention, since it is made for a base station control unit to also collect periodically the use channel **** data of the base station radio equipment with which it adjoins in others and a service area among two or more base station radio equipment which a local station manages through a data circuit, the decision of the usable channel of the base station radio equipment contiguous to the base station radio equipment in other service areas is also made exact.
[0014]
[Example] Next, the example of this invention is explained. In drawing 1 , the block diagram of one example of this invention and drawing 2 show the processing sequence diagram of one example of this invention, and drawing 3 shows an example of the data composition in a base station contr l unit. this example consists of data circuits 31 which connect between the base station control unit 11 and 12 with the base station radio

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equipment 1-7 located at the center of each radio zone, the base station control unit 11 which manages the base station radio equipment 1-5, and the base station control unit 12 which manages the base station radio equipment 6 and 7 etc., as shown in drawing 1 .
[0015] Moreover, each radio zone as for which the base station radio equipment 1-5 etc. carries out a ** area constitutes the channel setting control area 21 which the base station control unit 11 manages, and each radio zone as for which the base station radio equipment 6 and 7 etc. carries out a ** area constitutes the channel setting control area 22 which the base station control unit 12 manages. The channel setting control area 21 and the channel setting control area 22 are area which adjoins, respectively.
[0016] The base station control units 11 and 12 are equipped with a means to notify two or more usable channels to the base station radio equipment 1-7, respectively, and have the base station radio equipment (identification number ID) use channel **** collection base station radio equipment ID and use channel **** deta. Moreover, the base station radio equipment 1-7 is equipped with a means to measure the field strength of the notified channel.
[0017] Drawing 3 shows the data structure which the base station control unit 11 has, and consists of the base station radio equipment ID 41, use channel **** collection base station radio equipment ID 42, and use channel **** data 43. the base station radio equipment 1-5 with which the base station control unit 11 manages the base station radio equipment ID 41 -- it consists of respectively peculiar base station radio equipment ID The use channel **** collection base station radio equipment ID 42 consists of ID of a local station, adjoining base station radio equipment ID, other base station radio equipment ID, etc. corresponding to each base station radio equipment ID of the base station radio equipment 1-5.
[0018] For example, ID41 of the base station radio equipment 1 is related with the adjoining base station radio equipment ID about the self-base station radio equipment ID and the base station radio equipment 2-5, and the base station radio equipment 6 and 7, and also it consists of base station radio equipment ID. Furthermore, the use channel **** data 43 are formed corresponding to each of such use channel **** collection base station radio equipment ID 42.
[0019] Next, operation of this example is explained with drawing 1 , drawing 2 , and drawing 3 . In the case of the radio zone facing the boundary of management area, the base station control unit 11 requires periodically the data on the base station control unit 12 which manages the adjoining area 22 through a data circuit 31 (Step 101 of drawing 2), and demand data are notified to the base station control unit 11 through a data circuit 31 according to this from the base station control unit 12 (Step 102 of drawing 2).
[0020] a thing with the call request to the subscriber of the public network which 8 does not illustrate to drawing 1 here in the end (mobile station) of the non-end of line a ** area is carried out into the radio zone of the base station radio equipment 1 -- carrying out (Step 103 of drawing 2) -- the base station radio equipment 1 receives the call request, and gives a channel demand to the base station control unit 11 (St p 104 of drawing 2)
[0021] The base station control unit 11 which received this channel demand In case an usable channel is notified to the base station radio equipment 1, data collection of the use channel **** data 43 is performed from the use channel **** collection base station radio equipment ID 42 of the base station radio equipment 1 and the adjoining base station radio equipment 2-7 (Step 105 of drawing 2). Two or more usable channels which do not have trouble in using it with the base station radio equipment 1 by taking the AND of those collection **** data 43 are determined (Step 106 of drawing 2). And the base station control unit 11 notifies two or more of these determined usable channels to the base station radio equipment 1 (Step 107 of drawing 2).
[0022] The base station radio equipment 1 chooses arbitrary channels out of two or more notified usable channels, and measures field strength. When the measurement result is under a predetermined value, it judges that it is unusable level, and the following usable channel is chosen, and

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field strength is measur d.
[0023] Hereafter, similarly, the measurement result of field strength repeats the above-mentioned operation until the usable channel beyond a predetermined value is chosen, the base station radio equipment 1 determines the usable channel as a use channel, when a measurement result is beyond a predetermined value, and it notifies the determined use channel to the base station control unit 11 (above, steps 108 and 109 of drawing 2).
[0024] The base station control unit 11 which received the notice of this channel hunt demand "rewrites while in use" the use channel **** data 43 of the base station radio equipment 1 from an "opening" (Step 110 of drawing 2). If the channel hunt O.K. returns to the base station radio equipment 1, the telephone call which used the channel with the base station radio equipment 1 will be started (Step 111 of drawing 2). After a telephone call is completed, the base station control unit 11 rewrites the use channel **** data 43 of the base station radio equipment 1 to an "opening" "out of use" (Step 112 of drawing 2).
[0025] thus, in case the base station radio equipment 1 determines a use channel according to this example Are notified from the base station control unit 11 rather than measuring the field strength of all channels. Since the usable channel by which the measurement result of the field strength beyond a predetermined value was obtained by the beginning out of two or more usable channels beforehand conjectured that there is no interference logically was determined as the use channel, determination of the use channel which does not have interference quickly compared with th former is made.
[0026] Moreover, in this example, since the base station control unit 11 is connected through the adjoining base station control unit 12 and an adjoining data circuit 31 and bidirectional data communication is performed, a use channel can be chosen like the radio zone where the base station control unit 11 also manages the base station control unit 12.
[0027]
[Effect of the Invention] As explained above, according to this invention, with the base station radio equipment which the base station control unit determined and notified two or more usable channels which do not have interference logically to the base station radio equipment which carried out th channel demand, and carried out the channel demand Since it was made to make the usable channel by which the measurement result of the field strength beyond a predetermined value was obtained by the beginning out of the notified usable channel of these plurality determine it as a use channel, Since a use channel can be determined in a short time compared with the conventional channel setting method of measuring the field strength of all channels and determining a use channel and it is a dynamic channel setup, It can do [comparing with the conventional method which assigns frequency fixed, and aiming at a deployment of frequency or].
[0028] Moreover, when a base station control unit also collects periodically the use channel **** data of the base station radio equipment with which it adjoins in others and a service area among two or more base station radio equipment which a local station manages through a data circuit according to this invention Since the decision of the usable channel of the base station radio equipment contiguous to the base station radio equipment in other service areas is made exact, The decision of the use channel by the base station radio equipment contiguous to the base station radio equipment in other service areas is also made exact, and selection of a use channel can be similarly performed in the base station radio equipment in other service areas.

[Translation done.]